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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,564	09/28/2001	Toshiaki Otsuki	392.1726	2579

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EXAMINER

HARTMAN JR, RONALD D

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,564

Applicant(s)

OTSUKI ET AL.

Examiner

Ronald D Hartman Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the Amendment filed on 8/11/2003.
2. Claims 1-2 and 5 were amended.
3. Claims 3-4 were canceled.
4. Claims 6-8 are new.
5. Claims 1-2, 5-8 are presented for examination.

Election/Restrictions

6. Newly submitted claims 6-7 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

The "robot" feature had not been previously described by way of any of the previously pending claims, either in independent form or dependent form, and has been added after an office action on the merits of previously presented claims (1-5). Therefore, since newly added claims (6-7) are directed towards "Robot Control" which finds applicability in class 700/245 and the previously examined claims (1-5) were directed towards "Generic Acceleration/Deceleration Control" which finds applicability in Class 700/63, clearly a new search would need to be performed by the examiner which would create an undue burden on the examiner.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits.

Accordingly, claims 6-7 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

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Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-2 introduces the use of a "magnitude". The specification is not enabled for "magnitude" or "absolute value". Since this feature lacks support, "magnitude" has been interpreted to mean simply any "value".

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng, U.S. Patent No.5, 331,264; having an effective filing date of 4/15/1993.

10. As per claims 1 and 8, Cheng teaches a method for controlling axial movements, wherein movement commands are processed cyclically, the method comprising:

- determining a "speed related parameter" for each cycle based on a "position parameter" (e.g. C4 L64, "the position parameter") of the previous cycle (e.g. Figure 3 element 28 and C4 L65 - C5 L.2, "In other words, the input commands position destination position is used together with the already known current planning position. This is typically the destination position of the previous motion ...") such that a speed-acceleration curve, generated by the movement commands for each axis, will lie along a predetermined speed-acceleration curve (in essence, this claims a feature whereby a last speed determined is used for speed-acceleration control using a speed-acceleration curve as a profile. This system is essentially taught by Cheng's realization of a jerk profile that is derived using acceleration, velocity and position profiles [C10 L1-3, "Once the solution for the jerk profile is completely known, the acceleration, velocity and distance profile can be obtained by successive integrations."] for the purposes of minimizing vibration for a tool tip [C11 1-64-67, "use the asymmetric acceleration-speed constraint curve and the deceleration-speed constraint curve to reduce mechanical vibrations at the tool tip when the robot comes to stop; and"] ; and
- wherein the predetermined speed-acceleration curve has different acceleration values for a given speed _value based on whether the axis is accelerating or decelerating (e.g. taught as the use of a bang-bang jerk profile having three time regions of adjustment for control purposes, C12 L4-16; Figure 7 and C6 L50-51, "it is also determined ... that it is advantageous to use acceleration different from deceleration."), and wherein the predetermined speed-acceleration curve is determined "before" the movement commands are generated.

11. As per claims 1 and 8, Cheng does not specifically teach the "speed related parameter" to be "acceleration" nor the "position parameter" being "speed". However, in light of Cheng's disclosure, particularly C5 L37-42, velocity is believed to be an obvious variation of acceleration, and position is believed to be an obvious variation of speed since they are all mathematical derivatives or integrals of

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one another. Therefore, since these mathematical relationship were well known at the time the invention was made, and since they are also clearly taught by Cheng, the use of "acceleration" in place of "velocity", and the use of "position" in place of "speed" would have been obvious to one of ordinary skill in the art at the time the invention was made since they would provide for "a more flexible and generally applicable acceleration/deceleration control scheme", as is disclosed by Cheng.

12. As per claim 2, a feature whereby the speed-acceleration curve provides a different acceleration "value" for each direction of movement is a feature that would have been obvious to one of ordinary skill in the art at the time the invention was made. That is, since Cheng is clearly directed towards a method of motion control using pre-generated movement profiles for robots, and since it is well known in the art that robots typically move in more than one direction, a feature whereby the control aspects of Cheng are applicable to a robotic system capable of movements in more than one direction would be obvious to one of ordinary skill in the art at the time the invention was made.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko, U.S Patent No. 5,485,065; having an effective filing date of 4/1/1994.

14. As per claim 5, Kaneko teaches a position commanding method and apparatus wherein:

- a memory stores individual speeds, in acceleration and corresponding predetermined restricted accelerations (e.g. thresholds) and stores speeds in deceleration and corresponding predetermined restricted decelerations (e.g. thresholds)(Figure 11 element 106 and C1 L42-45, "In particular, storing section stores the threshold value of

the output speed being output from the acceleration-deceleration speed controlling section.");

- an acceleration- deceleration determination means (Figure 11 element 104) for determining if a command speed should be done, and if so, then a speed is determined in the present cycle by using a speed in the present cycle as a command speed (inherent to Kaneko's use of a constant speed command and the ability of Kaneko to ascertain whether an acceleration, deceleration or constant speed command should be issued); and
- an output means for determining the amount of movement, in the present cycle based on the determined speed, and outputting the amount to servo control system (Figure 11 element 107).

As per claim 5, although Kaneko does not specifically teach a "table" for storing speed information related to accelerations and decelerations, it is an obvious variation of Kaneko for at least the following reason(s). That is, since Kaneko teaches that acceleration, deceleration and constant speeds may be represented by functions, and since these functions are merely continuous mathematical examples of a plurality of points (e.g. table or chart), the two, a table representing speed maximums and minimums is believed to be an obvious variation of the disclosed functions which are stored in storage and used to determine whether acceleration, deceleration or constant speed commands should be given. Therefore, since the incorporation of a "table" containing information about accelerations and decelerations and their respective limits is an obvious mathematical derivative of the functions Represented in Figures 1-4, this feature and its inclusion into Kaneko would be obvious for at least the same reason, and this incorporation would have been obvious to one of ordinary skill in the art at the time the invention was made.

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Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Ronald D Hartman Jr.

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October 19, 2003

Ramesh Patel
RAMESH PATEL
PRIMARY EXAMINER
10/21/03
For Anil Khatri